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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,167	03/10/2004	Atsuhiko Takeuchi	Q79698	3337

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EXAMINER

MARTIN, LAURA E

ART UNIT PAPER NUMBER

2853

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/796,167	<b>Applicant(s)</b> TAKEUCHI, ATSUHIKO	
	<b>Examiner</b> Laura E. Martin	<b>Art Unit</b> 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, and 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arquilevich et al. (US 20020060709) in view of Endo (US 20020085057).

#### **Arquilevich et al. discloses the following claim limitations:**

As per claim 1, Arquilevich et al. teaches a recording position correction method for correcting position deviation in a sub-scanning direction crossing a main scanning direction of a recording position on a medium to be recorded [0019], wherein an inkjet type recording apparatus performs recording on said medium to be recorded by ejecting ink from a plurality of nozzles while allowing a recording head [0019], on which nozzle arrays comprising said plurality of nozzles provided in said sub-scanning direction are arranged in said main scanning direction, to perform scanning along at least one of forward and backward paths in said main scanning direction [0006], comprising: an ejection step of ejecting said ink from said plurality of nozzles onto said medium to be recorded [0006]; a measurement step of measuring an amount of position deviation in said sub-scanning direction of an ink dot recorded [0019]; and a correction step of previously shifting and correcting a recording position of an ink dot to be recorded on said material for each of said plurality of nozzles based on said measured amount of

said position deviation [0019], a recording position correction method, wherein ink is ejected from at least one nozzle of each of two nozzle arrays [0006], and the recording position of said ink dot to be recorded on said material for each of said plurality of nozzles is previously shifted and corrected based on an amount of deviation of an ink dot ejected and recorded from said nozzle of said nozzle arrays in said correction step [0019].

As per claim 3, Arquilevich et al. teaches a recording position correction method, wherein ink is further ejected from a nozzle [0006].

As per claim 5, Arquilevich et al. teaches a recording position correction method, wherein said ink is ejected while said recording head performs scanning along said forward and/or backward path(s) [0073] in said main scanning direction in said ejection step, and said recording position of said ink dot is previously shifted and corrected in said correction step [0019] based on an intermediate value between an amount of position deviation of an ink dot ejected and recorded in case said ink is ejected while said recording head performs scanning along said forward path in said main scanning direction [0018] and an amount of position deviation of an ink dot ejected and recorded in case said ink is ejected while said recording head performs scanning along said backward path [0073].

As per claim 6, Arquilevich et al. teaches a recording position correction method, wherein said ink is ejected while said recording head performs scanning along said forward and/or backward path(s) in said main scanning direction in said ejection step [0073], and correction is performed in said correction step, wherein said recording

position of an ink dot to be recorded along said forward path in said main scanning direction is previously shifted based on an amount of position deviation in case said recording head performs scanning along said forward path in said main scanning direction and said recording position of an ink dot to be recorded along said backward path in said main scanning direction is previously shifted based on an amount of position deviation in case said recording head performs scanning along said backward path in said main scanning direction [0019] and [0063].

As per claim 7, Arquilevich et al. teaches a recording position correction method wherein ink is ejected from at least one nozzle of each of two nozzle arrays [0006].

As per claim 8, Arquilevich et al. teaches an inkjet type recording apparatus for performing recording on said medium to be recorded by ejecting ink from a plurality of nozzles while allowing a recording head, on which nozzle arrays comprising said plurality of nozzles provided in said sub-scanning direction [0019] are arranged in said main scanning direction, to perform scanning along at least one of forward and backward paths in said main scanning direction [0006], comprising a correcting unit for previously shifting and correcting a recording position of an ink dot to be recorded on said material for each of said plurality of nozzles based on an amount of position deviation in a sub-scanning direction crossing said main scanning direction of an ink dot ejected and recorded from said plurality of nozzles [0019].

As per claim 9, Arquilevich et al. teaches a computer program [0008] for correcting position deviation of an ink dot ejected and recorded from a plurality of nozzles in a sub-scanning direction crossing a main scanning direction, wherein an

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inkjet type recording apparatus allows a recording head [0019], on which nozzle arrays comprising said plurality of nozzles provided in said sub-scanning direction are arranged in said main scanning direction [0006], to perform scanning along at least one of forward and backward paths in said main scanning direction [0073], comprising a correction function of previously shifting and correcting a recording position of an ink dot to be recorded on said material for each of said plurality of nozzles based on an amount of position deviation of an ink dot ejected and recorded from said plurality of nozzles in said sub-scanning direction crossing said main scanning direction [0019].

**Arquilevich et al. does not disclose the following claim limitations:**

As per claim 1, Arquilevich et al. does not teach ink ejected from at least one nozzle of each of two nozzle arrays most distanced from each other in the main scanning direction among a plurality of nozzle arrays in said ejection step.

As per claim 3, Arquilevich et al. does not teach ink further ejected from a nozzle of a nozzle array among said plurality of nozzle arrays except said two nozzle arrays in said ejection step, and said recording position of said ink dot to be recorded on said material for each of said plurality of nozzles is previously shifted and corrected based on an amount of position deviation of an ink dot ejected and recorded from at least one nozzle of each of said two nozzle arrays and at least one nozzle of said nozzle array except said two nozzle arrays in said correction step.

As per claim 7, Arquilevich et al. does not teach ink is ejected from at least one nozzle of each of two nozzle arrays which eject said ink of two colors respectively among said plurality of nozzle arrays as priority is given to a color of which density is

highest in said ejection step, and said recording position of said ink dot to be recorded on said material for each of said plurality of nozzles is previously shifted and corrected based on an amount of position deviation of an ink dot ejected and recorded from said nozzle of said two nozzle arrays in said correction step.

As per claim 8, Arquilevich et al. does not teach a recording head on which nozzle arrays comprising the plurality of nozzles provided in a sub-scanning direction are arranged in a main scanning direction, wherein the ink is ejected from at least one nozzle of each of two nozzle arrays most distanced from each other in the main scanning direction among the plurality of nozzle arrays.

As per claim 9, Arquilevich et al. does not teach performing recording on a medium to be recorded by ejecting ink from at least one nozzle of each of two nozzle arrays most distanced from each other in the main scanning direction among a plurality of nozzle arrays, the nozzle of said two nozzle arrays are most distanced from each other in the main scanning direction.

**Endo et al. discloses the following claim limitations:**

As per claim 1, Endo teaches ink ejected from at least one nozzle of each of two nozzle arrays most distanced from each other in said main scanning direction among said plurality of nozzle arrays in said ejection step [0087] (figure 11, there are three nozzle arrays ( $K_D$  and  $C_D$ ;  $C_L$  and  $M_D$ ; and  $M_L$  and  $Y_D$ ), and said recording position of said ink dot to be recorded on said material for each of said plurality of nozzles is previously shifted and corrected based on an amount of position deviation of an ink dot

ejected and recorded from said nozzle of said two nozzle arrays in said correction step [0084].

As per claim 3, Endo teaches said ink is further ejected from a nozzle of a nozzle array among said plurality of nozzle arrays except said two nozzle arrays in said ejection step [0104], and said recording position of said ink dot to be recorded on said material for each of said plurality of nozzles is previously shifted and corrected based on an amount of position deviation of an ink dot ejected and recorded from at least one nozzle of each of said two nozzle arrays and at least one nozzle of said nozzle array except said two nozzle arrays in said correction step [0084].

As per claim 7, Endo teaches ink ejected from at least one nozzle of each of two nozzle arrays which eject said ink of two colors respectively among said plurality of nozzle arrays as priority is given to a color of which density is highest in said ejection step (figure 11, elements 1 and 2), and said recording position of said ink dot to be recorded on said material for each of said plurality of nozzles is previously shifted and corrected based on an amount of position deviation of an ink dot ejected and recorded from said nozzle of said two nozzle arrays in said correction step [0084].

As per claim 8, Endo teaches a recording head on which nozzle arrays comprising the plurality of nozzles provided in a sub-scanning direction are arranged in a main scanning direction, wherein the ink is ejected from at least one nozzle of each of two nozzle arrays most distanced from each other in the main scanning direction among the plurality of nozzle arrays [0087] (figure 11, there are three nozzle arrays ( $K_D$  and  $C_D$ ;  $C_L$  and  $M_D$ ; and  $M_L$  and  $Y_D$ )).



As per claim 9, Endo teaches performing recording on a medium to be recorded by ejecting ink from at least one nozzle of each of two nozzle arrays most distanced from each other in the main scanning direction among a plurality of nozzle arrays [0087] (figure 11, there are three nozzle arrays ( $K_D$  and  $C_D$ ;  $C_L$  and  $M_D$ ; and  $M_L$  and  $Y_D$ ), the nozzle of said two nozzle arrays are most distanced from each other in the main scanning direction.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the recording position correction method of Arquilevich et al. as modified with the disclosure of Endo in order to more effectively correct recording position errors.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arquilevich et al. (US 20020060709) in view of Yuji (JP 05-330088).

As per claim 4, Arquilevich et al. teaches a recording position correction method, wherein the ink is ejected from a plurality of nozzles [0006] and said recording position of said ink dot is previously shifted and corrected for each of said colors in said correction step [0019].

As per claim 4, Arquilevich et al. does not teach ink ejected from said plurality of nozzles in order that a color of said ink from each of said nozzle arrays is different from one another in said ejection step, and said recording position of said ink dot is previously shifted and corrected for each of said colors in said correction step.

As per claim 4, Yuji teaches ink ejected from said plurality of nozzles in order that a color of said ink from each of said nozzle arrays is different from one another in said ejection step (figure 4, elements 1K, 1C, 1M, and 1Y; [0023-0030]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the recording position correction method of Arquilevich et al. with the disclosure of Yuji in order to more effectively correct recording position errors.

### ***Response to Arguments***

Applicant's arguments filed 7/20/06 have been fully considered but they are not persuasive.

Applicant argues that none of the cited references teaches or suggests ejecting ink from at least one nozzle of the two nozzle arrays most distanced from each other in the main scanning direction; however, the examiner disagrees. Endo discloses, in [0087], a first set of nozzles, (figure 11, elements 1) ejecting ink. In figure 11, there are three arrays (K<sub>D</sub> and C<sub>D</sub>; C<sub>L</sub> and M<sub>D</sub>; and M<sub>L</sub> and Y<sub>D</sub>); in each of these arrays, there are nozzle elements (1) that eject ink. The examiner would also like to point out that the applicant only claims two nozzle arrays; from this claim language, any distance between arrays can be read as the nozzle arrays most distanced.

The applicant also argues that Endo does not disclose or suggest correcting a recording position. Arquilevich et al. discloses this teaching; Endo also discloses the claim in [0087] the nozzles, each at a specific position (shown in figure 11) are tested; if one of these nozzles do not operate, there is a deviation in the original working nozzle

positioning. This must be corrected by shifting the recording head to a different position for complementary printing [0017].

The examiner would also like to point out that there is a correction step, taught in Arquilevich [0019] in which the shifting and correcting of the position of an ink dot to be recorded based on the amount of position derivation of an ink drop ejected. It would have been obvious to one having ordinary skill in the art at the time of the invention that Arquilevich et al. can be modified with the disclosure of Endo, as it is known that any array or nozzle is capable of printing.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura E. Martin

 9/14/06  
**MANISH S. SHAH**  
**PRIMARY EXAMINER**